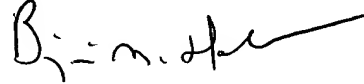The application is placed in condition for initial examination. Prompt examination and allowance in due course are respectfully solicited.

Respectfully submitted,

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JAO:BMH/gpn

Attachment:
    Appendix

Date: April 4, 2002

OLIFF & BERRIDGE, PLC
P.O. Box 19928
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DEPOSIT ACCOUNT USE AUTHORIZATION
Please grant any extension necessary for entry; Charge any fee due to our Deposit Account No. 24-0037

APPENDIX

Changes to Specification:

Paragraphs **[0029]** through **[0031]**, **[0088]** and **[0090]** are deleted.

The following is a marked-up version of the amended paragraphs:

[0032] Fig. ~~20~~ 17 is a flow chart illustrating the embedding of binary segmentation values into an input image using the second embodiment of the method for embedding a watermark into an image according to this invention.

[0089] The third embodiment of the watermark embedding method according to this invention is coded in C and tested. All test images are halftoned and printed at 600 dots per inch (dpi), then scanned at 600 dpi. Each 2x2 block of pixels is manually classified into three classes: pictorial regions, text and graphics on solid background, and text and graphics on halftone background. ~~The resulting segmentation map is shown in Fig. 18. In Fig. 18,~~ ~~the~~ The black regions indicate pictures, the gray regions indicate text on halftone background, and the white regions indicate text on solid background. The segmentation map is directly embedded in the original image ~~shown in Fig. 17~~, without encoding. ~~The resulting watermarked image is shown in Fig. 19.~~ The three segmentation classes are represented by the 45°, 90° and 135° 2X2 polarized patterns shown in parts (d)-(f) of Fig. 13, respectively.

[0092] Fig. ~~20~~ 17 is a flowchart outlining one exemplary embodiment of a method of retrieving watermarks embedded by the various exemplary embodiments of the systems and methods according to this invention. Beginning in step S400, operation continues to step S405, where the watermarked image data is input. Next, in step S410, a 2x2 pixel pattern is chosen from the watermarked image data. Next, in step S415, a determination is made whether the 2x2 pixel pattern is all white or all black. If the 2x2 pixel pattern is all white or all black, operation goes to step 455. Otherwise, operation goes to step S420.

[0097] It should be appreciated that which values for the next two bits of the watermark chosen to correspond to the 2x2 binary pattern of the binary watermarked image data is not limited to those shown in Fig. 20 17. For example, if the 2x2 binary pattern has a 90° polarized angle, the values of the next two bits of the watermark data can be determined to be 11.